



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/155,635	07/09/1999	HIDEHARU SATO	48699	8942
21874	7590	01/11/2006	EXAMINER	
EDWARDS & ANGELL, LLP P.O. BOX 55874 BOSTON, MA 02205			LEWIS, BEN	
			ART UNIT	PAPER NUMBER
			1745	
DATE MAILED: 01/11/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/155,635

Applicant(s)

SATO ET AL.

Examiner

Ben Lewis

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 9-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

Art Unit: 1745

***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12 December 2005 has been entered.

***Claim Rejections - 35 USC § 112***

The claim rejections under 35 U.S.C. 112, second paragraph, on claims 9-12 are withdrawn, because independent claim 9 has been amended.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Art Unit: 1745

2. Claims 9, 11 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamada et al., US Patent 6,040,092.

Yamada et al. disclose lithium secondary batteries having anode active materials, formed from graphite coated with a less crystalline carbon. (Note abstract.) In a specific embodiment, artificial graphite powder KS 25 is used as the core graphite material. The core graphite has a particle size of 14  $\mu\text{m}$ , a surface area of 10.3  $\text{m}^2/\text{g}$  and a R value of 0.2. The ratio R is the ratio of the intensity of the Raman peak in the vicinity of 1360  $\text{cm}^{-1}$  to the intensity of the Raman peak in the region 1580  $\text{cm}^{-1}$ . (Column 3, lines 30-34) (Column 10, lines 39-45).

The core graphite material satisfies applicants' formula  $y \leq (42 \text{ m}^2/\text{g} \cdot \mu\text{m}^{-0.6})(x)^{0.6}$  where y is surface area in  $\text{m}^2/\text{g}$ , x is particle size in  $\mu\text{m}$ ,  $4.9 \leq y \leq 25$ , and  $4 \leq x \leq 40$  since

$$10.3 \text{ m}^2/\text{g} \leq (52 \text{ m}^2/\text{g} \cdot \mu\text{m}^{-0.6})(14\mu\text{m})^{-0.6} = 10.7 \text{ m}^2/\text{g}.$$

The coated graphite material disclosed by Yamada et al. has a particle size of 18  $\mu\text{m}$  and a surface area of 3.8  $\text{m}^2/\text{g}$ . (Column 10, line 63-column 11, line 1.) Therefore, the coated graphite material also satisfies the formula  $y \leq (52 \text{ m}^2/\text{g} \cdot \mu\text{m}^{-0.6})(x)^{0.6}$  where y is surface area in  $\text{m}^2/\text{g}$  and x is particle size in  $\mu\text{m}$  and  $0.1 \leq y \leq 20$ ,  $4 \leq x \leq 30$  since

$$3.8 \text{ m}^2/\text{g} \leq (52 \text{ m}^2/\text{g} \cdot \mu\text{m}^{-0.6})(18\mu\text{m})^{-0.6}$$

$$3.8 \text{ m}^2/\text{g} \leq 9.18 \text{ m}^2/\text{g}.$$

With regards to claims 11 and 12, Yamada et al., teach the R values of their

Art Unit: 1745

inventive cathode materials should be "not more than 0.4". (Column 3, Lines 20-33)

This recitation is considered to encompass values ranging from 0 to 0.4, which encompasses the ranges of R values recited in applicants' claims 11 and 12. Thus, the claims are anticipated.

***Claim Rejections - 35 USC § 102/103***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 10 is rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yamada et al., US Patent 6,040,092.

Art Unit: 1745

With respect claim 10, as discussed above, Yamada et al. disclose applicants' invention essentially as claimed, with the exception that Yamada et al. do not disclose a half width value of the  $1570\text{-}1620\text{ cm}^{-1}$  Raman peak between 14 to 22. However, it is the position of the examiner that the properties of said material, such as the shapes of Raman peaks observed for graphite which are determined by the defects present in the graphite materials are inherent, given that the graphitic material disclosed by Yamada et al and the present application are similar. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. Inherency is not established by probabilities or possibilities. In re Robertson, 49 USPQ2d 1949 (1999).

Alternatively applicants' invention as a whole would have been obvious to one of ordinary skill in the art. The shapes of Raman peaks observed for graphite will be determined by the defects present in the graphite materials, and since the graphites disclosed by Yamada et al. and the applicants are similar, the shapes of the Raman spectra must be similar.

As evidence, note the website <http://www.nims.go.jp/dynamics/Raman/Raman5.html> which shows Raman spectra of graphite being disordered by ion irradiation.

*Discovery of optimum value of result effective variable in known process is ordinarily within skill of art.* In re Boesch, CCPA 1980, 617F.2d 272, 205 USPQ215.

***Response to Arguments***

6. Applicant's arguments filed on December 12th, 2005 have been fully considered but they are not persuasive.

*Applicant's principle arguments are*

*(a) Yamada discloses that R values smaller than 0.4 even after carbon coating does not provide for a good battery. Yamada teaches away from the Applicants' claimed invention.*

(b) Yamada does not teach or suggest the instant claim 10 graphite material wherein "Raman spectroscopic analysis using argon ion laser light wavelength of 5,145 Å, the half-value of the peak existing at 1,570-1620  $\text{cm}^{-1}$ , which is represented by a  $\Delta V$  value, is 14 to 22.

In response to Applicant's arguments, please consider the following comments.

(a) Applicants claim is drawn to the graphite material which forms the core of the coated material satisfying conditions (a) and (b) in claim 9. These conditions do not apply to coated carbon material. Yamada is referring to coated carbon material with R values smaller than 0.4.

Art Unit: 1745

(b) It is the position of the examiner that the properties of said material, such as the shapes of Raman peaks observed for graphite which are determined by the defects present in the graphite materials are inherent, given that the graphitic material disclosed by Yamada et al and the present application are similar. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. Inherency is not established by probabilities or possibilities. In re Robertson, 49 USPQ2d 1949 (1999).

Alternatively applicants' invention as a whole would have been obvious to one of ordinary skill in the art. The shapes of Raman peaks observed for graphite will be determined by the defects present in the graphite materials, and since the graphites disclosed by Yamada et al. and the applicants are similar, the shapes of the Raman spectra must be similar.

As evidence, note the website <http://www.nims.go.jp/ldynamics/Raman/Raman5.html> which shows Raman spectra of graphite being disordered by ion irradiation.

*Discovery of optimum value of result effective variable in known process is ordinarily within skill of art.* In re Boesch, CCPA 1980, 617F.2d 272, 205 USPQ215.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ben Lewis whose telephone number is 571-272-6481. The examiner can normally be reached on 8:30am - 5:30pm.

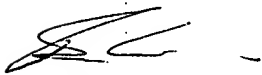


Art Unit: 1745

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ben Lewis



Patent Examiner  
Art Unit 1745



**PATRICK JOSEPH RYAN**  
**SUPERVISORY PATENT EXAMINER**